

**Navy Advancement Center**

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# **Advancement Handbook for Aviation Machinist's Mate**

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## PREFACE

The purpose of the Advancement Handbook is to help you focus your preparation for Navywide advancement-in-rating examinations. The bibliographies (BIBs) together with this handbook form a comprehensive examination study package. Since this handbook provides skill and knowledge components for each paygrade of the Aviation Machinist's Mate (AD) rating, it helps you concentrate your study on those areas that may be tested. This feature will help you get the most out of your study time.

Each page in parts 1 through 4 of this Advancement Handbook presents general skill areas, specific skill areas, the knowledge factors associated with each skill area, the pertinent references that address each skill, and the subject areas that may be covered on the examination. The skill statements describe the skills you are expected to perform for each paygrade. The skill statements are cumulative; that is, you are responsible for the skills for the paygrade you are competing for, your present paygrade, and all paygrades below.

Although this handbook is very comprehensive, it cannot cover all the tasks performed in the rating. As a result, the advancement examinations may contain questions more detailed than described in the "*Exam Expectations*" section of the skill areas.

Remember that advancement competition is keen, so your keys to advancement include not only comprehensive advancement examination study but also sustained superior performance.

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## Part 1

### Advancement Handbook for AD3

## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>General Power Plant Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Perform functional checks on aircraft engines
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for troubleshooting engine mechanical malfunctions</li> <li>• Procedures for troubleshooting engine low power</li> <li>• Procedures for troubleshooting engine overspeed</li> <li>• Procedures for troubleshooting turbine inlet temperature (TIT) gauges</li> <li>• Procedures for measuring TIT</li> <li>• Procedures for troubleshooting engine gas temperature (EGT) gauges</li> <li>• Procedures for measuring EGT</li> <li>• Procedures for troubleshooting engine pressure ratio (EPR) gauges</li> <li>• Procedures for measuring EPR</li> <li>• Procedures for troubleshooting turbine measured temperature (TMT)</li> <li>• Procedures for removing aircraft engines</li> <li>• Procedures for installing aircraft engines</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 10 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on troubleshooting procedures on aircraft engines. Questions will be of a general nature or specific to a type of equipment. You will be questioned on functional checks, troubleshooting mechanical malfunctions, low power, overspeed, TIT, EGT, EPR, and removing and installing aircraft engines.

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General AD <i>Skill Area</i>	<b>General Power Plant Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain power plant lubrication systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of the types of engine oil systems</li> <li>• Engine oil system component locations</li> <li>• Engine oil system operation</li> <li>• Procedures for servicing an engine oil system</li> <li>• Procedures for draining and flushing an engine oil system</li> <li>• Engine oil system oil sampling and oil sample submission requirements</li> <li>• Engine oil system filter inspection and replacement requirements</li> <li>• Procedures for inspecting and cleaning engine oil system magnetic plugs</li> <li>• Procedures for logging engine oil consumption</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapters 4 and 5 (NAVEDTRA 12300)</li> <li>• Joint Oil Analysis Program Manual, Chapters 1 through 4 (NAVAIR 17-15-50.1)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume V, Chapter 4 and 9 (OPNAVINST 4790.2)</li> </ul>

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about engine oil system operation and maintenance. Questions will be of a general nature or specific to a type of engine. You will be questioned on the types of systems, on component functions, and on operation. You also will be questioned on the procedures for replacing components, on the location of components as well as on the procedures for obtaining and submitting oil samples and on the procedures for logging oil consumption.</p>
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## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>General Power Plant Maintenance</b>
<i>A skill</i> you are expected to perform from the General Skill Area above:	Maintain power plant bleed air and anti-ice systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Bleed air system operation</li> <li>• Procedures for cleaning and inspecting bleed air system components</li> <li>• Bleed air system purging requirements</li> <li>• Procedures for replacing bleed air system components</li> <li>• Bleed air system component replacement requirements</li> <li>• Anti-ice system component locations</li> <li>• Anti-ice system operation</li> <li>• Procedures for cleaning and inspecting anti-ice systems</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 6 (NAVEDTRA 12300)</li> <li>• Aircraft Weapons Systems Cleaning and Corrosion Control, Chapter 3 (NAVAIR 01-1A-509)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect questions about bleed air systems and anti-ice system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on the operation and locations of components, on the procedures to clean and inspect components, and on the procedures for replacing components.</p>

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General AD <i>Skill Area</i>	<b>General Power Plant Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain power plant intake systems and power plant exhaust systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of the types of engine intake systems</li> <li>• Engine intake system operation</li> <li>• Inspection requirements for engine intake systems for leaks, wear, and damage</li> <li>• Engine intake system component cleaning and lubrication requirements</li> <li>• Procedures for inspecting components of engine intake systems</li> <li>• Engine intake system component replacement requirements</li> <li>• Identification of the types of engine exhaust systems</li> <li>• Engine exhaust system operation</li> <li>• Engine exhaust system component cleaning and lubrication requirements</li> <li>• Inspection requirements for the engine exhaust systems for leaks, wear, and damage</li> <li>• Procedures for replacing engine exhaust system components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapters 1, 6, 7, 9, and 10 (NAVEDTRA 12300)</li> <li>• Aircraft Weapons Systems Cleaning and Corrosion Control, Chapter 3 (NAVAIR 01-1A-509)</li> </ul>

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about power plant intake system and exhaust system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on types of systems and component functions as well as on procedures for cleaning, inspecting, lubricating, and replacing components.</p>
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General AD <i>Skill Area</i>	<b>General Power Plant Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain power plant reduction gearboxes and power plant accessory gearboxes.
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Engine reduction gearbox operation</li> <li>• Procedures for inspecting engine reduction gearboxes for leaks, wear, and damage</li> <li>• Engine reduction gearbox cleaning and lubrication requirements</li> <li>• The inspection of components of engine reduction gearboxes</li> <li>• Procedures for replacing engine reduction gearboxes</li> <li>• Engine accessory gearbox operation</li> <li>• Inspection requirements for the components of engine accessory gearboxes</li> <li>• Cleaning and lubrication requirements for engine accessory gearboxes</li> <li>• Procedures for replacing components of engine accessory gearboxes</li> <li>• Procedures for replacing engine accessory gearboxes</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapters 1, 7, and 8 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about engine reduction and accessory gearbox system operation, maintenance, and replacement. Questions will be of a general nature or specific to a type of engine. You will be questioned on component replacement, cleaning, and inspection.

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General AD <i>Skill Area</i>	<b>Engine Component Inspection and Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain power plant intake, compressor, and turbine blades
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Inspection requirements for the inspection of engine intake, compressor, and turbine blades for wear and damage</li> <li>• Procedures for blending of nicks and scratches in engine blades (intake, compressor, turbine)</li> <li>• Inspection requirements for the inspection of engine stator vanes for wear and damage</li> <li>• Procedures for blending of nicks and scratches in engine stator vanes</li> <li>• Procedures for borescoping engine compressor stages</li> <li>• Procedures for removing compressor turbine rotor assemblies</li> <li>• Cleaning and lubrication requirements for components of compressor turbine rotor assemblies</li> <li>• Inspection requirements for the inspection of components of compressor turbine rotor assembly for wear and damage</li> <li>• Procedures for installing compressor turbine rotor assemblies</li> <li>• Procedures for inspecting turbine blade axial clearances</li> <li>• Procedures for inspecting turbine blade radial clearances</li> </ul>

<p><i>References</i> you should study to gain the knowledge you need to perform this skill:</p>	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapters 1, 7, 9, and 10 (NAVEDTRA 12300)</li> <li>• Aircraft Weapons Systems Cleaning and Corrosion Control, Chapters 3 and 4 (NAVAIR 01-1A-509)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about intake, compressor, turbine blades, and stator vanes. Questions will be of a general nature or specific to a type of equipment. You will be questioned on procedures for inspecting, blending, borescoping, and cleaning. In addition you will be asked questions on replacement of components.</p>

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General AD <i>Skill Area</i>	<b>Engine Component Inspection and Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain power plant fuel system components
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Engine fuel nozzle operation</li> <li>• Identification of types of engine fuel nozzles</li> <li>• Inspection requirements for the inspection of engine fuel nozzles for wear and damage</li> <li>• Procedures for performing engine fuel nozzle checks</li> <li>• Engine fuel nozzle replacement requirements</li> <li>• Identification of types of engine fuel controls</li> <li>• Engine fuel control operation</li> <li>• Procedures for performing functional checks on engine fuel controls</li> <li>• Troubleshooting concepts for components of engine fuel control systems</li> <li>• Procedures for cleaning components of engine fuel control systems</li> <li>• Inspection requirements for the inspection of components of engine fuel control systems for leaks, wear, and damage</li> <li>• Procedures for replacing components of engine fuel control systems</li> <li>• Procedures for rigging and adjusting components of engine fuel control systems</li> <li>• Identification of types of engine fuel pumps</li> <li>• Engine fuel pump operation</li> <li>• Procedures for performing functional checks on engine fuel pumps</li> <li>• Troubleshooting concepts for components of engine fuel pumps</li> <li>• Procedures for cleaning components of engine fuel pumps</li> </ul>

	<ul style="list-style-type: none"> <li>• Inspection requirements for the inspection of components of engine fuel pumps for leaks, wear, and damage</li> <li>• Procedures for adjusting components of engine fuel pumps</li> <li>• Procedures for replacing components of engine fuel pumps</li> <li>• Troubleshooting concepts for engine fuel flow transmitters</li> <li>• Procedures for replacing engine fuel flow transmitters</li> </ul>
<p><i>References</i> you should study to gain the knowledge you need to perform this skill:</p>	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapters 4, 5, 7, 8, 9, and 10 (NAVEDTRA 12300)</li> <li>• Aircraft Weapons Systems Cleaning and Corrosion Control, Chapter 3 (NAVAIR 01-1A-509)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about engine fuel component system operation and maintenance. Questions will be of a general nature or specific to a type of engine. You will be questioned on types of fuel nozzles, on fuel controls, and on fuel pump systems. You also will be questioned on component functions and operation. In addition, you will be questioned on procedures for replacing, cleaning, inspecting, rigging, adjusting, and troubleshooting engine fuel systems.</p>



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General AD <i>Skill Area</i>	<b>Engine Component Inspection and Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain power plant afterburner system
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Engine afterburner system operation</li> <li>• Procedures for performing functional checks on engine afterburner systems</li> <li>• Cleaning requirements for components of engine afterburner systems</li> <li>• Inspection requirements for the inspection of components of engine afterburner systems for wear and damage</li> <li>• Procedures for replacing engine afterburner components and engine afterburners</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 1 (NAVEDTRA 12300)</li> <li>• Aircraft Weapons Systems Cleaning and Corrosion Control, Chapter 3 (NAVAIR 01-1A-509)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect questions about engine afterburners system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on afterburner systems and on component functions and operation. You also will be questioned on procedures for functional checks of afterburner systems as well as on procedures for cleaning and inspecting of afterburner components. In addition, you will be questioned on replacement of afterburner components and afterburners.</p>

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General AD <i>Skill Area</i>	<b>Engine Component Inspection and Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain engine compressor and engine combustion sections
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of types of engine compressors</li> <li>• Inspection requirements for the inspection of engine compressor cases for wear and damage</li> <li>• Procedures for repairing engine compressor cases</li> <li>• Engine compressor case replacement requirements</li> <li>• Identification of the types of engine combustion sections</li> <li>• Troubleshooting concepts for engine combustion sections</li> <li>• Procedures for performing engine hot section inspections</li> <li>• Procedures for replacing engine combustion cans</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapters 1, 7, 8, and 10 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about engine compressor and combustion system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on types of compressors and combustion systems, on component functions and operation, on procedures for repairing or replacing engine compressor cases, on procedures for performing engine hot section inspections, and on replacing engine combustion cans as well as on concepts for troubleshooting combustion sections.

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General AD <i>Skill Area</i>	<b>Electro/Mechanical Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain engine starting systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of the types of engine starter systems</li> <li>• Engine starter system operation</li> <li>• Procedures for performing functional checks on engine starter systems</li> <li>• Troubleshooting concepts for engine starter systems</li> <li>• Inspection requirements for the inspection of engine starter systems for wear and damage</li> <li>• Troubleshooting concepts for components of engine starter systems</li> <li>• Cleaning and inspection requirements for engine starter system components</li> <li>• Procedures for replacing engine starter system components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 6 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about engine starting system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on types of starters, on component functions and operation, and on procedures for troubleshooting, inspecting, replacing, and cleaning components.

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General AD <i>Skill Area</i>	<b>Electro/Mechanical Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain engine ignition systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of the types of engine ignition systems</li> <li>• Engine ignition system operation</li> <li>• Procedures for performing functional checks on engine ignition systems</li> <li>• Inspection requirements for the inspection of engine ignition systems for wear and damage</li> <li>• Troubleshooting concepts for engine ignition systems</li> <li>• Procedures for cleaning components of engine ignition systems</li> <li>• Inspection requirements for the inspection of components of engine ignition systems</li> <li>• Procedures for replacing components of engine ignition systems</li> <li>• Troubleshooting concepts for components of engine ignition systems</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapters 6 and 9 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about engine ignition system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on types of ignition systems, on component functions and operation, on procedures for troubleshooting and replacing components, and on procedures for inspecting and cleaning ignition components.</p>
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## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Engine Linkage Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain engine power control, emergency shutdown control, and throttle linkage systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of the types of engine power control systems</li> <li>• Engine power control operation</li> <li>• Procedures for performing functional checks on engine power control systems</li> <li>• Troubleshooting concepts for components of engine power control systems</li> <li>• Cleaning and lubricating requirements for components of engine power control systems</li> <li>• Procedures for inspecting components of engine power control systems for wear and damage</li> <li>• Procedures for replacing components of engine power control systems</li> <li>• Procedures for rigging and adjusting components of engine power control systems</li> <li>• Identification of the types of engine emergency shutdown control systems</li> <li>• Engine emergency shutdown control system operation</li> <li>• Performing functional checks on engine emergency shutdown control systems</li> <li>• Troubleshooting concepts for components of emergency shutdown control systems</li> <li>• Procedures for cleaning and lubricating components of engine emergency shutdown control systems</li> <li>• Procedures for inspecting components of engine emergency shutdown control systems</li> <li>• Procedures for replacing components of engine emergency shutdown control systems</li> </ul>

	<ul style="list-style-type: none"> <li>• Procedures for rigging and adjusting components of engine emergency shutdown systems</li> <li>• Procedures for rigging and adjusting components of throttle quadrant assemblies</li> <li>• Requirements for performing functional checks on engine throttle linkages</li> <li>• Troubleshooting concepts for engine throttle linkages</li> <li>• Procedures for cleaning and lubricating engine throttle linkages</li> <li>• Inspection requirements for the inspection of engine throttle linkages for wear and damage</li> <li>• Procedures for replacing components of engine throttle linkage assemblies</li> <li>• Procedures for rigging and adjusting engine throttle linkages</li> </ul>
<p><i>References</i> you should study to gain the knowledge you need to perform this skill:</p>	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapters 7 and 8 (NAVEDTRA 12300)</li> <li>• Aircraft Weapons Systems Cleaning and Corrosion Control, Chapter 3 (NAVAIR 01-1A-509)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about engine power control, emergency shutdown, and throttle quadrant system operation and maintenance. These questions may be of a general nature or specific to a type of equipment. You will be questioned on types of systems and on component functions as well as on procedures for replacing, inspecting, troubleshooting, cleaning, lubricating, rigging, and adjusting control and linkage systems.</p>

## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Auxiliary Power</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain auxiliary power units (APUs)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• APU system operation</li> <li>• Procedures for performing functional checks on APU systems</li> <li>• Troubleshooting concepts for components of APU systems</li> <li>• Cleaning and lubricating requirements for components of APU systems</li> <li>• Inspection requirements for the inspection of components of APU systems for leaks, wear, and damage</li> <li>• Procedures for replacing components of APU systems</li> <li>• Procedures for servicing APU systems</li> <li>• Rigging and adjusting requirements for components of APU systems</li> <li>• Procedures for APU turns</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 6 (NAVEDTRA 12300)</li> <li>• Naval Aviation Maintenance Program (NAMP) Volume I, Chapter 10 (OPNAVINST 4790.2)</li> <li>• Aircraft Weapons Systems Cleaning and Corrosion Control, Chapter 3 (NAVAIR 01-1A-509)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>



<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about APU system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on APU system component functions as well as on procedures for troubleshooting, inspecting replacing, servicing, cleaning, lubricating, rigging, and adjusting APUs. You also will be questioned on procedures for APU turns.</p>
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## Advancement Handbook for AD3

General Ad <i>Skill Area</i>	<b>Helicopter Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain helicopter rotary head assemblies and helicopter transmission systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of the types of helicopter rotary head assemblies</li> <li>• Helicopter rotary head assembly operation</li> <li>• Procedures for cleaning and lubricating components of rotary head assemblies</li> <li>• Inspection requirements for the inspection of components of rotary head assemblies for leaks, wear, and damage</li> <li>• Replacement procedures for components of rotary head assemblies</li> <li>• Identification of the types of helicopter transmission systems</li> <li>• Helicopter transmission system operation</li> <li>• Troubleshooting concepts for components of helicopter transmission systems</li> <li>• Procedures for cleaning and lubricating components of helicopter transmission systems</li> <li>• Inspection requirements for the inspection of components of helicopter transmission systems for leaks, wear, and damage</li> <li>• Replacement procedures for components of helicopter transmission systems</li> <li>• Procedures for servicing helicopter transmission oil systems</li> </ul>

<p><i>References</i> you should study to gain the knowledge you need to perform this skill:</p>	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 7 (NAVEDTRA 12300)</li> <li>• Aircraft Weapons Systems Cleaning and Corrosion Control, Chapter 3 (NAVAIR 01-1A-509)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about helicopter rotary head assembly and helicopter transmission operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on types of rotary head and transmission systems, on component functions and operation, and on procedures for replacing, inspecting, cleaning, troubleshooting, and servicing rotary head and transmission systems.</p>

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General AD <i>Skill Area</i>	<b>Helicopter Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain helicopter rotary blade systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of the types of rotor blade assemblies</li> <li>• Rotor blade assembly operation</li> <li>• Cleaning and lubricating requirements for components of rotary blade assemblies</li> <li>• Procedures for replacing rotor blade assemblies</li> <li>• Procedures for balancing rotor blades</li> <li>• Procedures for trimming rotor blades</li> <li>• Identification of the types of helicopter blade tracking systems</li> <li>• Helicopter blade tracking system operation</li> <li>• Inspection requirements for the inspection of components of helicopter blade tracking systems for wear and damage</li> <li>• Procedures for replacing components of helicopter blade tracking systems</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 7 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about helicopter rotary blade system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on types of blades and on component functions and operation. You also will be questioned on procedures for replacing, cleaning, balancing, trimming, and tracking blades as well as on procedures for inspecting blade tracking system components.</p>
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General AD <i>Skill Area</i>	<b>Helicopter Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain helicopter flight control systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Helicopter flight control system operation</li> <li>• Cleaning and lubricating requirements for components of helicopter flight control systems</li> <li>• Inspection requirements for the inspection of components of helicopter flight control systems for leaks, wear, and damage</li> <li>• Procedures for replacing components of helicopter flight control systems</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 7 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about the helicopter flight control system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on operation of a helicopter flight control system as well as on cleaning, lubricating, inspecting, and replacing components of a helicopter flight control system.

## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Aviation Support</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain support equipment (SE)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of types of SE systems</li> <li>• SE system operation</li> <li>• SE requirements for removing and installing engines in aircraft</li> <li>• Procedures for performing pre-operational checks on SE</li> <li>• Inspection requirements for the inspection of SE for leaks, wear, and damage</li> <li>• Procedures for servicing SE</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 3 (NAVEDTRA 12300)</li> <li>• Naval Aviation Maintenance Program (NAMP) Volume I, Chapters 10, 12, 14, 15, and 16 (OPNAVINST 4790.2)</li> <li>• Aviation Maintenance Ratings, Chapters 1, 2, 4 and 5 (NAVEDTRA 12017)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about support equipment system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on types, functions and operation of SE, on procedures for servicing and inspecting SE, and on pre-operational checks for SE.

## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Aviation Support</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Conduct aircraft fueling and defueling operations
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of types of external fuel tanks</li> <li>• External fuel tank operation</li> <li>• Procedures for removing and installing external fuel tanks</li> <li>• Procedures for performing and directing aircraft fueling operations</li> <li>• Procedures for performing and directing aircraft defueling operations</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 4 (NAVEDTRA 12300)</li> <li>• Aviation Maintenance Ratings, Chapter 5 (NAVEDTRA 12017)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about aircraft fuel system operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on types of storage tanks, on procedures for fueling and defueling aircraft, and on procedures for installing and removing external storage tanks.



## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Corrosion Control and Material Preservation</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain inspection schedule
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Inspection requirements for the following:               <ul style="list-style-type: none"> <li>- Special inspections</li> <li>- Phase inspections</li> <li>- Conditional inspections</li> <li>- Daily inspections</li> <li>- Turnaround inspections</li> </ul> </li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Maintenance Ratings, Chapter 5 (NAVEDTRA 12017)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume I, Chapter 12 (OPNAVINST 4790.2)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> <li>• Applicable maintenance requirements cards (MRCs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about aircraft and engine inspection procedures, intervals, and logbook requirements for each type of inspection. Questions will be of a general nature or specific to a type of equipment.

## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Corrosion Control and Material Preservation</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Preserve and depreserve aircraft fuel cells and engines
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of types of aircraft fuel cell preservation and depreservation</li> <li>• Aircraft fuel cell preservation requirements</li> <li>• Procedures for depreserving aircraft fuel cells</li> <li>• Identification of types of aircraft engine preservation and depreservation</li> <li>• Procedures for removing corrosion from engines and engine compartments</li> <li>• Procedures for cleaning aircraft engines</li> <li>• Aircraft engine preservation requirements</li> <li>• Procedures for depreserving aircraft engines</li> <li>• Procedures for cleaning aircraft surfaces and structures</li> <li>• Preservation tag requirements</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 10 (NAVEDTRA 12300)</li> <li>• Aircraft Weapons Systems Cleaning and Corrosion Control, Chapters 3, 4, and 9 (NAVAIR 01-1A-509)</li> <li>• Preservation of Naval Aircraft, Chapters 1, 2, 3, and 4 (NAVAIR 15-01-500)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume I, Chapters 10, 12, 13, and 15 (OPNAVINST 4790.2)</li> <li>• Applicable maintenance requirements cards (MRCs)</li> </ul>

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about aircraft fuel and engine preservation and depreservation maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on types of preservation and depreservation of fuel cells and engines, on cleaning procedures and corrosion removal on engines and components, and on preservation tag preparation.</p>
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## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Hazardous Material Control and Handling</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain hazardous materials (HAZMAT)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Identification of the types of HAZMAT</li> <li>• Procedures for reviewing a material safety data sheet (MSDS)</li> <li>• Procedures for updating an MSDS</li> <li>• MSDS posting requirements</li> <li>• Procedures for tagging and labeling HAZMAT</li> <li>• Procedures for recycling HAZMAT</li> <li>• Requirements for cleaning up fuel and oil spills</li> <li>• Procedures for disposing of used chemicals</li> <li>• Procedures for disposing of used absorbents (speedy dry, rags, pads, and so forth)</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Preservation of Naval Aircraft, Chapter 1 (NAVAIR 15-01-500)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume I, Chapter 11 (OPNAVINST 4790.2)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume V, Chapters 20 (OPNAVINST 4790.2)</li> <li>• Navy Occupational Safety and Health (NAVOSH), Chapter 3 (OPNAVINST 5100.19)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> <li>• Local hazardous material (HAZMAT) instructions</li> </ul>

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about hazardous material handling and procedures. Questions will be of a general nature or specific to a type of HAZMAT. You will be questioned on types of HAZMAT. In addition you will be questioned on proper labeling of HAZMAT and on procedures for cleaning up, disposing, and recycling of HAZMAT.</p>
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## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Maintenance Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Review aircraft discrepancy books (ADBs)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for reviewing an ADB</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Naval Aviation Maintenance Program (NAMP), Volume I, Chapter 12 (OPNAVINST 4790.2)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the ADB. Questions will be of a general nature or specific to a type of maintenance action. You will be questioned on procedures for reviewing the ADB.

## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Maintenance Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain tool control
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for reviewing tool inventories</li> <li>• Procedures for updating tool inventories</li> <li>• Procedures for engraving identification marks on tools</li> <li>• Procedures for inspecting tool containers for missing, damaged, or broken tools</li> <li>• Procedures for searching for missing tools</li> <li>• Information needed for preparing broken and missing tool reports</li> <li>• Requirements for reviewing broken and missing tool reports</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Maintenance Ratings, Chapter 5 (NAVEDTRA 12017)</li> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 2 (NAVEDTRA 12300)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume V, Chapter 13 (OPNAVINST 4790.2)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about tool control inventories and tool identification marks. Questions will be of a general nature or specific to a type of equipment. You also will be questioned on procedures for inspecting tool containers and on searching for missing tools. In addition, you will be questioned on preparing missing and broken tool reports.

## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Maintenance Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Initiate an unscheduled maintenance action
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for using maintenance manuals, illustrated parts breakdowns (IPBs), supply catalogs, and other documentation tools to identify parts and assemblies</li> <li>• Definitions of maintenance action form (MAF) data elements</li> <li>• Supply system requirements for returns</li> <li>• Tool control procedures</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Naval Aviation Maintenance Program (NAMP), Volume III, Chapter 8 (OPNAVINST 4790.2)</li> <li>• Aviation Rating Fundamentals, Chapter 3 (NAVEDTRA 12017)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on initiating a maintenance action. Questions will be of a general nature or specific to a type of maintenance action. You will be questioned on MAF preparation.



## Advancement Handbook for AD3

General AD <i>Skill Area</i>	<b>Aircraft Fuel Systems Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain aircraft fuel systems and components of aircraft fuel systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Aircraft fuel system operation</li> <li>• Procedures for performing functional checks on aircraft fuel systems</li> <li>• Procedures for troubleshooting aircraft fuel systems</li> <li>• Inspection requirements for the inspection of aircraft fuel systems for leaks, wear, and damage</li> <li>• Aircraft fuel system component operation</li> <li>• Troubleshooting concepts for components of aircraft fuel systems (other than engine)</li> <li>• Cleaning and inspecting requirements for components of aircraft fuel systems (other than engine)</li> <li>• Procedures for taking fuel samples</li> <li>• Inspection requirements for the inspection of fuel samples for contamination</li> <li>• Procedures for disassembling components of aircraft fuel systems (other than engine)</li> <li>• Procedures for replacing components of aircraft fuel systems (other than engine)</li> <li>• Cleaning and lubrication requirements for components of in-flight refueling (IFR) systems</li> <li>• Inspection requirements for the inspection of components of IFR systems for leaks, wear, and damage</li> <li>• Identification of types of aircraft fuel cells</li> <li>• Aircraft fuel cell operation</li> <li>• Procedures for removing aircraft fuel cells</li> <li>• Procedures for installing aircraft fuel cells</li> <li>• Procedures for troubleshooting aircraft fuel cells for leaks</li> </ul>

	<ul style="list-style-type: none"> <li>• Inspection requirements for the inspection of aircraft fuel cells for leaks, wear, and damage</li> <li>• Aircraft fuel dump system operation</li> <li>• Procedures for troubleshooting components of aircraft fuel dump systems</li> <li>• Inspection requirements for the inspection of components of the aircraft fuel dump systems for leaks, wear, and damage</li> <li>• Procedures for replacing components of the aircraft fuel dump systems</li> <li>• Aircraft fuel transfer system operation</li> <li>• Procedures for performing functional checks on the aircraft fuel transfer systems</li> <li>• Troubleshooting concepts for components of aircraft fuel transfer systems</li> <li>• Inspection requirements for the inspection of components of the aircraft fuel transfer systems for leaks, wear, and damage</li> <li>• Procedures for replacing components of the aircraft fuel transfer systems</li> </ul>
<p><i>References</i> you should study to gain the knowledge you need to perform this skill:</p>	<ul style="list-style-type: none"> <li>• Aviation Maintenance Ratings, Chapter 5 (NAVEDTRA 12017)</li> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 4 (NAVEDTRA 12300)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume V, Chapter 3 (OPNAVINST 4790.2)</li> <li>• Aircraft Fuel Cells and Tanks (NAVAIR 01-1A-35)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>

*Exam Expectations.* These are subject areas you should know to help you answer exam questions correctly:

You can expect questions about aircraft fuel systems and questions about aircraft fuel systems operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on aircraft fuel systems, on IFR systems, on fuel dump systems and on fuel transfer systems. You will be questioned on functional checks, troubleshooting, inspection, cleaning, lubrication, component disassembly, component assembly, and component installation for aircraft fuel systems, IFR systems, fuel dump systems, and fuel transfer systems. In addition, you will be questioned on fuel cells to include types, cell operation, cell removal and installation as well as cell troubleshooting and inspection. Further, you will be questioned on fuel sampling and fuel inspection.

## Part 2

### Advancement Handbook for AD2

## Advancement Handbook for AD2

General AD <i>Skill Area</i>	<b>Engine Component Inspection and Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain engine afterburners
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for replacing engine exhaust cases</li> <li>• Procedures for repairing engine exhaust cases</li> <li>• Procedures for troubleshooting engine afterburners</li> <li>• Procedures for removing engine afterburners</li> <li>• Replacement procedures for engine afterburners</li> <li>• Engine afterburner assembly requirements</li> <li>• Engine afterburner disassembly requirements</li> <li>• Procedures for troubleshooting components of engine afterburner systems</li> <li>• Procedures for inspecting components of afterburner system</li> <li>• Procedures for replacement of components of engine afterburner systems</li> <li>• Procedures for replacement of engine afterburners</li> <li>• Procedures for rigging engine afterburner systems</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 1, 9, and 10 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about engine afterburner maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on engine scheduling, on component replacement, on troubleshooting concepts, and on rigging procedures.

## Advancement Handbook for AD2

General AD <i>Skill Area</i>	<b>Electro/Mechanical Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain engine indicating systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for troubleshooting components of engine performance indicating systems</li> <li>• Procedures for performing functional checks on engine electrical systems</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 6 and 9 (NAVEDTRA 12300)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about engine indicating and electrical system maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on troubleshooting and functional checks on engine electrical systems.

## Advancement Handbook for AD2

General AD <i>Skill Area</i>	<b>Engine Linkage Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain engine power control, emergency shutdown control, and throttle linkage systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Troubleshooting emergency shutdown control systems</li> <li>• Procedures for inspecting components of emergency shutdown control systems</li> <li>• Procedures for replacing components of emergency shutdown control systems</li> <li>• Procedures for rigging and adjusting components of emergency shutdown control systems</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 8 (NAVEDTRA 12300)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about troubleshooting procedures on emergency shutdown control system. Questions will be of a general nature or specific type of equipment. You will be questioned on troubleshooting components of the emergency shutdown control system.

## Advancement Handbook for AD2

General AD <i>Skill Area</i>	<b>Helicopter Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain helicopter rotary heads, blade tracking, and flight control systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Troubleshooting components of rotary head assemblies</li> <li>• Procedures for rigging and adjusting components of rotary head assemblies</li> <li>• Procedures for performing functional checks on helicopter transmission systems</li> <li>• Procedures for aligning components of helicopter transmission systems</li> <li>• Procedures for inspecting components of rotor blade assemblies</li> <li>• Procedures for removing, inspecting and installing rotor blades</li> <li>• Troubleshooting components of helicopter blade tracking systems</li> <li>• Procedures for inspecting components of helicopter blade tracking systems</li> <li>• Rigging and adjusting requirements for helicopter blade tracking systems</li> <li>• Procedures for performing functional checks on helicopter flight control systems</li> <li>• Troubleshooting concepts for helicopter flight control systems</li> <li>• Procedures for rigging and adjusting components of helicopter flight control systems</li> <li>• Procedures for troubleshooting helicopter gearbox oil pressure fluctuations</li> <li>• Procedures for replacing helicopter in-flight refueling (HIFR) filters</li> </ul>



<p><i>References</i> you should study to gain the knowledge you need to perform this skill:</p>	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 7 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions about helicopter rotary head, blade tracking, and flight control systems operation and maintenance. Questions will be of a general nature or specific to a type of equipment. You will be questioned on component functional checks, on troubleshooting, on rigging, and on adjusting rotary head, blade tracking, and flight control systems.</p>

## Advancement Handbook for AD2

General AD <i>Skill Area</i>	<b>General Power Plant Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain oil systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for testing oil samples for contamination</li> <li>• Procedures for troubleshooting gearbox oil pressure fluctuations (non-helicopter)</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapters 5 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume V, Chapter 4 (OPNAVINST 4790.2)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about performing functional checks on aircraft engine oil systems. Questions will be of a general nature or specific to a type of equipment. You will be questioned on testing oil systems for contaminants and troubleshooting gearbox oil pressure functions.

## Advancement Handbook for AD2

General AD <i>Skill Area</i>	<b>Aviation Support</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Perform engine turnups
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for performing low-power aircraft turnups</li> <li>• Procedures for performing high-power aircraft turnups</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 10 (NAVEDTRA 12300)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume I, Chapter 10 (OPNAVINST 4790.2)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about engine turnups. Questions will be of a general nature or specific to a type of equipment. You will be questioned on vibration analysis as well as on low- and high-power turnups.

## Advancement Handbook for AD2

General AD <i>Skill Area</i>	<b>Maintenance Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain reports
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for verifying technical directives and documentation in aircraft logbooks</li> <li>• Procedures for reviewing maintenance data reports (MDRs)</li> <li>• Requirements for preparing the following special reports: <ul style="list-style-type: none"> <li>- Technical publication deficiency report (TPDR)</li> <li>- Hazardous material report (HMR)</li> <li>- Quality deficiency report (QDR)</li> </ul> </li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Maintenance Ratings, Chapters 2 and 6, (NAVEDTRA 12017)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume I, Chapters 12, 13, and 15 (OPNAVINST 4790.2)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about different reports and procedures. Questions will be of a general nature or specific to a type of report. You will be questioned on TPDRs, HMRs, QDRs, and MDRs.

## Advancement Handbook for AD2

General AD <i>Skill Area</i>	<b>Aircraft Fuel Systems Maintenance</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain aircraft fuel systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for troubleshooting in-flight refueling (IFR) systems</li> <li>• Procedures for inspecting fuel cells</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 4 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> <li>• Aircraft Fuel Cells and Tanks (NAVAIR 01-1A-35)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about troubleshooting procedures on aircraft engines. Questions will be of a general nature or specific to a type of equipment. You will be questioned on IFR systems and fuel cell inspection.

## Advancement Handbook for AD2

General AD <i>Skill Area</i>	<b>Propeller Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain propeller systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for troubleshooting components of propeller systems</li> <li>• Procedures for cleaning and lubricating components of propeller systems</li> <li>• Procedures for inspecting components of propeller systems</li> <li>• Procedures for replacing components of propeller systems</li> <li>• Procedures for performing functional checks on propeller systems</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Machinist's Mate 3&amp;2, Chapter 8 (NAVEDTRA 12300)</li> <li>• Applicable maintenance instruction manuals (MIMs)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about propeller system operations. Questions will be of a general nature or specific to a type of equipment. You will be questioned on functional checks, troubleshooting, cleaning, replacing components, inspection and servicing of propeller systems.

## Part 3

### Advancement Handbook for AD1

## Advancement Handbook for AD1

General AD <i>Skill Area</i>	<b>Maintenance Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain work center reports and programs
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for monitoring work center support equipment (SE) operator qualification programs</li> <li>• Procedures for investigating aircraft damage (bird strike, battle, etc.)</li> <li>• Procedures for preparing aircraft history reports</li> <li>• Procedures for reviewing aircraft history reports</li> <li>• Procedures for updating aircraft history reports</li> <li>• Procedures for performing in-process quality assurance (QA) inspections</li> <li>• Procedures for final QA inspection requirements</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Aviation Maintenance Ratings, Chapter 6 (NAVEDTRA 12017)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume I, Chapters 12, and 14 (OPNAVINST 4790.2)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume III, Chapter 3 (OPNAVINST 4790.2)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about work center reports and programs. Questions will be of a general nature or specific to a type of report or program. You will be questioned on the SE operator program, investigating aircraft damage, aircraft history reports, conducting in-process and final QA inspections



## Part 4

### Advancement Handbook for ADC

## Advancement Handbook for ADC

General AD <i>Skill Area</i>	<b>Maintenance Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Carry out maintenance control operations
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for investigating support equipment (SE) misuse/abuse</li> <li>• Procedures for reviewing quality deficiency reports (QDRs)</li> <li>• Procedures for assigning aircraft to missions</li> <li>• Procedures for certifying aircraft safe for flight</li> <li>• Procedures for reviewing oil analysis reports</li> <li>• Procedures for approving aircraft maintenance actions</li> <li>• Procedures for preparing, reviewing and updating aircraft status reports</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Naval Aviation Maintenance Program (NAMP), Volume I, Chapter 12, 14 and 15 (OPNAVINST 4790.2)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume V, Chapter 9 and 10 (OPNAVINST 4790.2)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume III, Chapter 3 (OPNAVINST 4790.2)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about maintenance control operation. Questions will be of a general nature or specific to a type of procedure. You will be questioned on SE misuse and abuse, on QDRs, safe for flight certification, oil analysis reports, and aircraft status reports.

## Advancement Handbook for ADC

General AD <i>Skill Area</i>	<b>Maintenance Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	Carry out maintenance control operations
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> <li>• Procedures for reviewing equipment status reports</li> <li>• Requirements for reviewing subsystem capability impact reports (SCIR)</li> <li>• Requirements for preparing and reviewing request for technical assistance</li> <li>• Evaluation procedures for material conditions for combat readiness (mission capable status)</li> <li>• Procedures for scheduling aircraft maintenance</li> <li>• Procedures for scheduling aircraft inspections</li> <li>• Procedures for evaluating discrepancy trends</li> <li>• Requirements for drafting aircraft status reports</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Naval Aviation Maintenance Program (NAMP), Volume I, Chapter 12 (OPNAVINST 4790.2)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume V, Chapter 9 and 10 (OPNAVINST 4790.2)</li> <li>• Naval Aviation Maintenance Program (NAMP), Volume III, Chapter 3 (OPNAVINST 4790.2)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions about maintenance control operation. Questions will be of a general nature or specific to a type of procedure. You will be questioned on SCIR reports, requesting technical assistance, material conditions for combat readiness, scheduling aircraft for maintenance and inspections, discrepancy trends and aircraft status reports.

## Appendix A

### References Used in This Advancement Handbook

<b>Rating</b>	<b>Short Title</b>	<b>Long Title</b>	<b>Chapters/ Paragraphs</b>	<b>Stocking Point</b>
<b>AD3</b>	NAVAIR 01-1A-35	Aircraft Fuel Cells and Tanks		Note 3
	NAVAIR 01-1A-509	Aircraft Weapons Systems Cleaning and Corrosion Control	Chapters 3, 4, & 9	Note 3
	NAVEDTRA 12300	Aviation Machinist's Mate 3&2	Chapters All	Note 4
	NAVEDTRA 12017	Aviation Maintenance Ratings	Chapters All	Note 4
	NAVAIR 17-15-50.1	Joint Oil Analysis Program Manual	Chapters 1, 2, 3, & 4	Note 3
	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume I	Chapters 10, 11, 12, 13, 14, 15, & 16	Note 1
	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume III	Chapter 8	Note 1
	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume V	Chapters 3, 4, 9, 13, & 20	Note 1
	OPNAVINST 5100.19	Navy Occupational Safety and Health	Chapter 3	Note 4
	NAVAIR 15-01-500	Preservation of Naval Aircraft	Chapters 1, 2, 3, & 4	Note 3

<b>AD2</b>	NAVAIR 01-1A-35	Aircraft Fuel Cells and Tanks		Note 3
	NAVEDTRA 12300	Aviation Machinist's Mate 3&2	Chapters All	Note 4
	NAVEDTRA 12017	Aviation Maintenance Ratings	Chapters All	Note 4
	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume I	Chapters 10, 12, 13, & 15	Note 1
	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume V	Chapter 4	Note 1
<b>AD1</b>	NAVEDTRA 12017	Aviation Maintenance Ratings	Chapter 6	Note 4
	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume I	Chapters 12 & 14	Note 1
	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume III	Chapter 3	Note 1
<b>ADC</b>	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume I	Chapters 12, 14, & 15	OPNAVINST 4790.2
	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume III	Chapter 3	OPNAVINST 4790.2
	OPNAVINST 4790.2	Naval Aviation Maintenance Program (NAMP), Volume V	Chapters 9 & 10	OPNAVINST 4790.2

**LEGEND:**

Note 1—INTERNET – <http://greenshirt.nalda.navy.mil/>

Note 2—INTERNET – <http://neds.nebt.daps.mil/>

Note 3— INTERNET – <http://www.natec.navy.mil/>

Note 4—INTERNET – <http://www.advancement.cnet.navy.mil/>